UNITED STATES PATENT OFFICE.

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MAGNETO-ELECTRIC GENERATOR.

SPECIFICATION forming part of Letters Patent No. 632,667, dated September 5, 1899.

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To all whom it may concern:

Be it known that I, JOSEPH A. WILLIAMS, of Cleveland, county of Cuyahoga, and State of Ohio, have invented certain new and useful Improvements in Magneto-Electric Generators; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it pertains to make and use the same.

My invention relates to improvements in magneto-electric generators.

One object of the invention is to increase the efficiency of the U-shaped permanent magnets by a novel and peculiar connection of the pole-pieces to the magnets, so as to form a relative efficient contact and a great effective length of permanent magnet and distribute the magnetism from the magnets uniformly from the central portion of the pole-pieces in opposite directions circumferentially of the armature's sweep.

A further object of the invention is to provide a very simple, convenient, and reliable automatic cut-out, whereby when the generator is not in actual use for ringing the resistance of the armature-winding is automatically cut out of the circuit, so as to avoid weakening of received signals on the bells.

With these objects in view, and to the end of realizing other advantages hereinafter referred to, the invention consists in certain features of construction and combinations of parts, hereinafter described, and pointed out in the claims.

In the accompanying drawings, Figure I is an end elevation of a magneto-electric generator embodying my invention. Fig. II is a front side elevation of the machine, partly broken away and in section to more clearly show the construction. Fig. III is a plan, partly in section and partly broken away. Fig. IV shows the stationary contact and movable contacts of the cut-out and illustrates the manner in which the movable contacts are electrically disengaged from the stationary contact simultaneously with the rotation of the manually-driven shaft.

Referring to the drawings, A A designate the two oppositely-arranged pole pieces or plates that are arranged at opposite sides, respectively, of the circle or sweep of the armature B. Each pole-piece A has a central arc-shaped portion that extends close to and circumferentially of and partially surrounds the sweep of the armature. Each pole-piece at the lower extremity of its arc-shaped portion extends perpendicularly downwardly, as at *a*, to the wooden base or support C, and thence is flanged laterally and outwardly, as at *a'*, and overlaps and engages the adjacent end of the inverted U-shaped permanent magnets D, that straddle the pair of pole-pieces. Hence the pole-pieces are arranged between the legs or limbs of the magnets and have flanges *a'* that engage the extremities of the said magnets and are secured, preferably removably, by means of screws C' to the base or support C.

The generator in the case illustrated comprises three permanent magnets arranged in line edgewise, and the central magnet is snugly interposed between the two outer magnets, so as to avoid any air-space between the adjacent edges of adjacent magnets. The pole-pieces are preferably longer than the aggregate width of the magnets and extend, preferably, beyond the outer edges of the outer magnets.

For the purpose of obtaining a greater effective length of permanent magnet by connecting each pole-piece at the central portion to the connected magnets at a line horizontally bisecting the circular path or sweep of the armature or at the place where the permanent magnets are nearest to the said sweep or path, and for the purpose of distributing the magnetism to the pole-pieces from the magnets uniformly in opposite directions circumferentially of the armature's sweep, I provide a contact-plate G of magnetic material between the outer side of each pole-piece and the inner sides of the adjacent legs or limbs of the magnets, and the said plate G is preferably composed of sheet metal cut and stamped or bent into the shape required to form three perpendicular and flat sections *g*, engaging the inner sides of the three different magnets, respectively, and an arc-shaped section *g'* between adjacent straight sections and conforming to and fitting the external surface of the central arc-shaped portion of the pole-piece, and the central portion of the arc-shaped members of the contact-plate en-